

## **REMARKS**

Reconsideration and allowance of this application, as amended, is respectfully requested. Claims 1-23 are pending in this application. Claims 1, 10, and 14 have been amended to further clarify Applicants' claimed invention. Claims 11-13 have been amended to correct an error in dependency. The specific changes to the claims are shown above, wherein the insertions are underlined and the ~~deletions are stricken through~~.

Applicants submit that this application, as amended, is in condition for allowance and such action is earnestly requested. Each of the Examiner's reasons for rejection is addressed below.

### Section 102(e) – Matsunaga

Claims 1-9 stand rejected under 35 U.S.C. 102(e) as anticipated by U.S. Patent Application Publication No. US2003/0053893 to Matsunaga *et al.* ("Matsunaga"). The Examiner's Answer has helpfully clarified the rejection of Claims 1-9. With reference to Figure 5 of Matsunaga, the Examiner interprets Matsunaga's housing 41 as the claimed first substrate handling chamber, Matsunaga's buffer chamber 101 as the claimed buffer station, and Matsunaga's wafer transfer device 42 as the claimed robot arm. Examiner's Answer, pages 7-8. Moreover, the Examiner interprets "adjacent" to mean in close proximity but not necessarily touching. *Id.* at page 8. Applicants respectfully traverse this rejection.

Claim 1 is amended above to insert "directly" immediately preceding "adjacent." Claim 1 is also amended to recite "the robot arm is configured to access the buffer station." This limitation is clearly supported by Figures 3A-3C and paragraphs 42-44. In contrast, Matsunaga's wafer transfer device 42 is not configured to access the buffer chamber 101. Rather the wafer transfer device 42 is located within the housing 41 and only accesses a loading stage 51, a loading chamber 20, and an unloading chamber 30. Accordingly, Applicants respectfully submit that Claim 1 is allowable over Matsunaga, and request that this rejection be withdrawn.

Claims 2-9 recite additional features of advantage and utility. Furthermore, these claims are allowable *a fortiori* for substantially the same reasons presented above. Claims 2-9 depend from and therefore include all of the limitations of Claim 1, which distinguish patentably over

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Matsunaga. Matsunaga does not disclose or suggest all of the limitations of Claim 1, let alone the additional unique combinations of limitations recited by Claims 2-9. Accordingly, Applicants respectfully request that the rejection of Claims 2-9 also be withdrawn.

Section 103(a) – Matsunaga/Ozawa

Claims 10-18 stand rejected under 35 U.S.C. 103(a) as unpatentable over Matsunaga in view of U.S. Patent No. 5,810,538 to Ozawa *et al.* (“Ozawa”). Applicants respectfully traverse this rejection.

Claim 10 is amended above to recite that the buffer station is directly adjacent the first substrate handling chamber, and that the robot arm is configured to access the buffer station. As explained above, Matsunaga does not meet these limitations because Matsunaga’s wafer transfer device 42 does not access the buffer chamber 101. Ozawa is cited merely for allegedly teaching or suggesting a reduced pitch between a substrate rack in the reactor and a substrate cassette rack at a load port. While Applicants do not agree with the Examiner’s assertion that it would have been obvious to combine Matsunaga and Ozawa in the manner claimed, the issue is moot because Ozawa does not cure the aforementioned deficiency of Matsunaga with respect to Claim 10. Accordingly, Applicants respectfully request that this rejection of Claim 10 be withdrawn.

Claims 11-13 recite additional features of advantage and utility. Furthermore, these claims are allowable *a fortiori* for substantially the same reasons presented above. Claims 11-13 depend from and therefore include all of the limitations of Claim 10, which distinguish patentably over the cited combination of Matsunaga and Ozawa. The cited combination does not include all of the limitations of Claim 10, let alone the additional unique combinations of limitations recited by Claims 11-13. Accordingly, Applicants respectfully request that the rejection of Claims 11-13 also be withdrawn.

Claim 14 is amended above to recite that the buffer station is joined with the substrate handling chamber such it is possible to transfer substrates directly between the substrate handling chamber and the buffer station. As explained above, Matsunaga’s buffer chamber 101 is not joined with the housing 41 such that it is possible to transfer substrates directly between the housing 41 and the buffer chamber 101. Rather, the only chamber with which it is possible to directly transfer substrates with Matsunaga’s buffer chamber 101 is the negative pressure wafer

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transfer chamber 11. Ozawa is cited merely for allegedly teaching or suggesting a reduced pitch between a substrate rack in the reactor and a substrate cassette rack at a load port. While Applicants do not agree with the Examiner's assertion that it would have been obvious to combine Matsunaga and Ozawa in the manner claimed, the issue is moot because Ozawa does not cure the aforementioned deficiency of Matsunaga with respect to Claim 14. Accordingly, Applicants respectfully request that this rejection of Claim 14 be withdrawn.

Claims 15-18 recite additional features of advantage and utility. Furthermore, these claims are allowable *a fortiori* for substantially the same reasons presented above. Claims 15-18 depend from and therefore include all of the limitations of Claim 14, which distinguish patentably over the cited combination of Matsunaga and Ozawa. The cited combination does not include all of the limitations of Claim 14, let alone the additional unique combinations of limitations recited by Claims 15-18. Accordingly, Applicants respectfully request that the rejection of Claims 15-18 also be withdrawn.

#### Section 102(b) - Yonemitsu

Claims 14 and 19-23 stand rejected under 35 U.S.C. 102(b) as anticipated over U.S. Patent No. 6,143,083 to Yonemitsu *et al.* ("Yonemitsu"). Applicants respectfully traverse this rejection.

Conventional semiconductor processing tools that have load lock chambers adapted to contain and purge a batch of substrates hinder throughput because purging a batch of substrates (particularly a large batch) is considerably time-consuming, and it is not possible to move substrates between the load lock chamber and a downstream chamber (such as a processing chamber) during the purging process. In contrast to these conventional tools, Claim 14 is amended above to recite that the buffer station has only one opening for substrate transfer to and from the buffer station. This limitation is amply supported by the figures and specification of the present application. All substrates transferred to and from the buffer station must pass through this opening. Having only one opening, the buffer station does not form part of the necessary travel path of substrates that are moved from the front docking port of the substrate handling chamber to chambers downstream of the substrate handling chamber, such as a processing chamber. In other words, it is not necessary for the substrates to pass through the buffer station.

In comparison to conventional processing tools having load lock chambers with racks for purging batches of substrates, the tool of Claim 14 allows greater throughput because the purging of a batch of substrates in the buffer station does not prevent substrate transfer between the substrate handling chamber and downstream components, such as a processing chamber.

For example, with reference to Figure 1 of the present application, a buffer station 30 has a single buffer station door 13 at an interface with the handling chamber 22. The purging of a batch of substrates in the buffer station 30 does not hinder the ability of the robot arm 24 to transfer substrates between the handling chamber 22, loadlock chambers 40, handling chamber 44, and process chambers 58.

In contrast to the claimed tool, each of Yonemitsu's intermediate wafer holding chambers 30 has a first gate valve 91 on one side and a second gate valve 92 on another side. As such, the purging of a batch of wafers in Yonemitsu's chambers 30 hinders throughput because during the purging process it is not possible to advance unprocessed wafers from the front section 100 toward the reaction chambers 70 or to move processed wafers from the reaction chambers 70 back to the front section 100. Accordingly, Applicants respectfully submit that Yonemitsu does not disclose all of the limitations of Claim 14, and request that this rejection be withdrawn.

Claims 19-23 recite additional features of advantage and utility. Furthermore, these claims are allowable *a fortiori* for substantially the same reasons presented above. Claims 19-23 depend from and therefore include all of the limitations of Claim 14, which distinguish patentably over Yonemitsu. Yonemitsu does not disclose or suggest all of the limitations of Claim 14, let alone the additional unique combinations of limitations recited by Claims 19-23. Accordingly, Applicants respectfully request that the rejection of Claims 19-23 also be withdrawn.

#### No Disclaimers or Disavowals

Although the present communication includes alterations to the claims, or characterizations of claim scope or referenced art, Applicants are not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicants reserve the right to pursue at a later date any previously pending or other

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broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that Applicants have made any disclaimers or disavowals of any subject matter supported by the present application.

### CONCLUSION

In view of the foregoing amendments and remarks, Applicants respectfully submit that this application is in condition for allowance. If there is any further hindrance to allowance of the pending claims, the Examiner is invited to contact the undersigned.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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